AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1   1. (Currently amended) A method for using empirical measurements of
2   accesses to synchronization points within an application to construct a
3   performance model for the application, comprising:
4   modifying the application to record statistics related to the synchronization
5   points within the application, wherein the statistics include a directed call graph
6   specifying an ordering of function calls;
7   running the application to produce the statistics related to synchronization
8   points;
9   constructing the performance model based upon the statistics, wherein the
10   performance model is a queuing system model in which synchronization points in
11   the application are represented by service centers in the queuing system model,
12   wherein constructing the performance model involves constructing a queuing
13   model, wherein each synchronization point is a service center for jobs
14   representing processes that circulate between service centers in a manner specified
15   by the directed call graph; and
16   using the performance model to predict a performance of the application.

1   2. (Original) The method of claim 1,
2   wherein constructing the performance model based upon the statistics
3   involves constructing an analytic model for the application; and

2

4   wherein using the performance model to predict the performance involves

5   numerically solving the analytic model to predict the performance for the

6   application.

1   3. (Original) The method of claim 1,

2   wherein constructing the performance model based upon the statistics

3   involves constructing a simulation model for the application; and

4   wherein using the performance model to predict the performance involves

5   running the simulation model to predict the performance for the application.

1   4. (Original) The method of claim 1, wherein modifying the application

2   involves compiling the application with a profiling option in order to record the

3   statistics related to the synchronization points.

1   5. (Original) The method of claim 1, wherein modifying the application

2   involves modifying the executable code of the application to record the statistics

3   during system calls that operate on the synchronization points.

1   6. (Original) The method of claim 1, wherein the statistics include:

2   an identifier for a calling function;

3   an identifier for a mutual exclusion variable;

4   a time spent holding the mutual exclusion variable; and

5   a frequency of accesses to the mutual exclusion variable.

1   7-8. (Canceled).

1   9. (Currently amended) A computer-readable storage medium storing

2   instructions that when executed by a computer cause the computer to perform a

3

3   method for using empirical measurements of accesses to synchronization points

4   within an application to construct a performance model for the application, the

5   method comprising:

6   modifying the application to record statistics related to the synchronization

7   points within the application, wherein the statistics include a directed call graph

8   specifying an ordering of function calls;

9   running the application to produce the statistics related to synchronization

10   points;

11   constructing the performance model based upon the statistics, wherein the

12   performance model is a queuing system model in which synchronization points in

13   the application are represented by service centers in the queuing system model,

14   wherein constructing the performance model involves constructing a queuing

15   model, wherein each synchronization point is a service center for jobs

16   representing processes that circulate between service centers in a manner specified

17   by the directed call graph; and

18   using the performance model to predict a performance of the application.

1   10. (Original) The computer-readable storage medium of claim 9,

2   wherein constructing the performance model based upon the statistics

3   involves constructing an analytic model for the application; and

4   wherein using the performance model to predict the performance involves

5   numerically solving the analytic model to predict the performance for the

6   application.

1   11. (Original) The computer-readable storage medium of claim 9,

2   wherein constructing the performance model based upon the statistics

3   involves constructing a simulation model for the application; and

4

4   wherein using the performance model to predict the performance involves

5 running the simulation model to predict the performance for the application.

1   12. (Original) The computer-readable storage medium of claim 9, wherein

2 modifying the application involves compiling the application with a profiling

3 option in order to record the statistics related to the synchronization points.

1   13. (Original) The computer-readable storage medium of claim 9, wherein

2 modifying the application involves modifying the executable code of the

3 application to record the statistics during system calls that operate on the

4 synchronization points.

1   14. (Original) The computer-readable storage medium of claim 9, wherein

2 the statistics include:

3   an identifier for a calling function;

4   an identifier for a mutual exclusion variable;

5   a time spent holding the mutual exclusion variable; and

6   a frequency of accesses to the mutual exclusion variable.

1   15-16. (Canceled).

1   17. (Currently amended) An apparatus for using empirical measurements

2 of accesses to synchronization points within an application to construct a

3 performance model for the application, comprising:

4   a modification mechanism that is configured to modify the application to

5 record statistics related to the synchronization points within the application,

6 wherein the statistics include a directed call graph specifying an ordering of

7 function calls;

5

8   an execution mechanism that is configured to run the application to

9   produce the statistics related to synchronization points;

10   a performance model construction mechanism that is configured to

11   construct the performance model based upon the statistics, wherein the

12   performance model is a queuing system model in which synchronization points in

13   the application are represented by service centers in the queuing system model,

14   <u>wherein the performance model construction mechanism is configured to</u>

15   <u>construct a queuing model, wherein each synchronization point is a service center</u>

16   <u>for jobs representing processes that circulate between service centers in a manner</u>

17   <u>specified by the directed call graph</u>; and

18   a performance predicting mechanism that is configured to use the

19   performance model to predict a performance of the application.

1   18. (Original) The apparatus of claim 17,

2   wherein the performance model construction mechanism is configured to

3   construct an analytic model for the application; and

4   wherein the performance predicting mechanism is configured to predict

5   the performance of the application by numerically solving the analytic model.

1   19. (Original) The apparatus of claim 17,

2   wherein the performance model construction mechanism is configured to

3   construct a simulation model for the application; and

4   wherein the performance predicting mechanism is configured to predict

5   the performance of the application by running the simulation model.

1   20. (Original) The apparatus of claim 17, wherein the modification

2   mechanism is configured to compile the application with a profiling option in

3   order to record the statistics related to the synchronization points.

1   21. (Original) The apparatus of claim 17, wherein the modification

2 mechanism is configured to modify the executable code of the application to

3 record the statistics during system calls that operate on the synchronization points.

1   22. (Original) The apparatus of claim 17, wherein the statistics include:

2   an identifier for a calling function;

3   an identifier for a mutual exclusion variable;

4   a time spent holding the mutual exclusion variable; and

5   a frequency of accesses to the mutual exclusion variable.

1   23-24. (Canceled).